

## EXPANDING HOPKINS TO MEET THE AIR TRAFFIC NEEDS

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When NASA called to invite me to speak at this function, I must have misunderstood. I thought they said to prepare a list of problems with air travel and operating an airport and the attendees would disentangle my problems. After all, if the brain power in this room (especially you rocket scientists at NASA) couldn't solve my little airport problems, perhaps they weren't as bad as everyone thought. For those of you that live outside the Cleveland Area, let me update you on what we have been doing for the past 10 years.

First a little history about Cleveland Hopkins International Airport. The airport was the first municipally owned airport with a passenger terminal and scheduled passenger service in the world. We had the first air freight system and the first air traffic control tower. The first airfield lighting system, 1<sup>st</sup> flight information board and the 1<sup>st</sup> radio communications system at an airport in the world. Well, since the 1950's we have been anti-technology out there. Little has changed with the terminal or the original runway configuration. (Show aerial photo).

As you can see, we have managed to stuff the country's 33<sup>rd</sup> busiest airport between an interstate, Ford factory, NASA's Glenn Research Center and several communities. A large portion of our problems could disappear if quieter aircraft were on the drawing board. We all know that aircraft engines have come a long way in this area, but a large metal object passing through the air at 250 knots will make a sound even without engines. Getting back to the photo. The current runway configuration makes taxiing an aircraft quite a thrill. Just three years ago, Cleveland was rated number 1 in runway incursions in the United States. A small bit of technology assisted us in being removed from this list altogether two years later. Flashing lights were installed at confusing intersections.

We need to continue to develop and improve the way pilots traverse the airfield combined with the human element in the air traffic control tower. Maybe with some kind of voice recognition software in the cockpit that can also listen to a controller's instruction. This combined with sensors around the airport that can communicate with the cockpit. Too many times a taxiing pilot will be looking at the airport layout chart in his lap and blow through an intersection prior to receiving clearance. I know there are several companies developing this technology, Hughes is one that comes to mind, it think its called voice data link or something. These digital instructions, both

voice and non-verbal, would act as a redundant program with a picture, text and/or audible warning.

Again, looking at the map, you can see that our parallel runways seem a bit close together. 421 feet to be exact. Even when our recently announced new runway is constructed this year, they will still be only 1200 feet apart. Current navigation landing systems do not allow simultaneous landings and takeoffs with runways this close together. We need to continue to develop technology that will allow aircraft to fly closer together on and around airports. GPS seems to be the future for most of these systems.

A major issue for the FAA at Hopkins is the availability of frequencies for FAA and airport equipment. Communications is the key not only with the aircraft but all of the ground-based navigational equipment. Maybe some kind of frequency band compression that would allow more distinct frequency usage. I can only imagine this problem in the New York or Los Angeles area with all of the various frequency users that they have.

I've been reading about the future of getting an aircraft from Point A to Point B without too much intervention-they call this free flight. Let's just say I'm still skeptical. There are so many factors that enter into the equation, mainly weather. Most of the new aircraft with the glass cockpits are able to display pretty decent weather and also winds aloft information for the flight crew.

Some of the new heads up display systems in the cockpit should also include a live taxi-map for the pilot during his taxiing. It also should include an animated runway display for use on low or no visibility approaches to the airport. Even in a thick cloud cover, the pilot would see a simulated runway on his windscreen.

Now that we have the aircraft safely on the pavement, I have a few requests for the airport itself. How about heated pavements? I realize that this has been attempted in Europe for several years at a great cost. I've seen jet engines mounted on trucks to melt and blow snow, electrical wires in the pavement, hot water conduits under pavements. I think the key is to heat the pavement from below efficiently and economically. During the past several years, two passenger aircraft have left the runway while landing at Hopkins. Both were during snow and ice conditions. While our current runway chemicals; Potassium Acetate and Sodium Formate work as well as can be expected, the ideal solution is to pretreat the pavement with this futuristic heating system or anti icing chemicals. In this part of the country, the heating system would only be used immediately before a major event and during precipitation. On cold clear days, the sun and the black pavement does the rest.

Another issue facing airports is the vulnerability of our airfield lighting and ground based navigation systems. As you know, miles and miles of copper wire are buried under airports. Anytime construction activity slices on of these cables, the power outage can cause hours in flight delays. Anytime the airport is struck by lightening, one of our systems is effected. Of course we have backup generators that supply immediate power to the vital systems, replacing bulbs in the thousands of fixtures we have is very costly and time consuming. I like the idea of these solar powered garden and walkway lights you can get at Home Depot. This could possibly save an airport thousands of dollars in energy costs each year and millions in airline delays from damages caused by storms, bulb wear and buried antiquated cable. I read that just a few weeks ago Denver International Airport was hit with two major power outages. Image the reduced work loads on an airport generator if it doesn't have to power up the thousands of runway and taxiway lights and the miles of resistance in those water-logged cables.

(SHOW AERIAL) Several areas on the field are required to be sterile areas during use by many of the instrument landing systems. Some of these areas are called Glide slope critical areas. When we are landing in a certain configuration, no vehicle or aircraft can penetrate these areas. This makes the ground movement of aircraft nearly impossible. As the arriving and departing aircraft line up, the controllers are required to keep the aircraft out of these areas. Any large metal object inside could cause a signal disruption to an airplane on short final. Again, any satellite based navigational equipment will hopefully solve this and many issues with our ground equipment.

Finally, with such an extensive research facility nearby, I would invite NASA and the FAA to work together and use Cleveland Hopkins Airport as a test bed for new products and ideas. I realize that the FAA has a technical research center in Atlantic City (which sounds like an unusual location for a tech center). I really think that a partnership would benefit both federal agencies